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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,147	02/13/2004	Joo-hwan Noh	102-1010	4049
38209	7590	08/17/2005	EXAMINER	
STANZIONE & KIM, LLP 919 18TH STREET, N.W. SUITE 440 WASHINGTON, DC 20006			WALSH, RYAN D	
			ART UNIT	PAPER NUMBER
			2852	

DATE MAILED: 08/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/777,147

Applicant(s)

NOH, JOO-HWAN

Examiner

Ryan D. Walsh

Art Unit

2852

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4-22-2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: In paragraph [0041], there needs to be a space between the words "of" and "figure 1."

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 11-16, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US Pat. # 5,845,177) in view of Moriya et al. (US Pat. # 6,571,060).

Regarding claim 1, Choi discloses, "An apparatus to drive a roller used in an electrophotographic printer having a photoconductive drum (Col.1, Ln. 16-24), comprising: a drum gear having gear teeth (8) and coaxially installed (Col.3, Ln. 13-14) on the photoconductive drum (1) to be rotated therewith; and a first passive-roller (2) in contact with and rotated by the photoconductive drum and having a first passive roller gear (9) installed thereon and in contact with the drum gear to passively rotate." Choi does not teach, "wherein the first passive roller gear is made of a material having a lower hardness than the drum gear to absorb impulses due to a pitch error from gear teeth of the drum gear and the first passive roller gear." However, wherein the first

passive roller gear is made of a material having a lower hardness than the drum gear to absorb impulses due to a pitch error from gear teeth of the drum gear and the first passive roller gear is routine in the art as shown by Moriya et al. (see Abstract, Ln. 5-13). It would have been obvious to one skilled in the art at the time the invention was made to modify Choi's invention by having the first passive roller gear made of a material having a lower hardness than the drum gear to absorb impulses due to a pitch error from gear teeth of the drum gear and the first passive roller gear.

The ordinary artisan would have been motivated to modify Choi's invention in a manner described above for at least the purpose of reducing noise caused by the gears to promote a more efficient charging apparatus.

Regarding claims 2, 12, and 14 Choi does not teach, "wherein the first passive roller gear is made of a polyester material or an elastomer series material." However, wherein the first passive roller gear is made of a polyester material or an elastomer series material is routine in the art as shown by Moriya et al. (see Abstract, Ln. 5). It would have been obvious to one skilled in the art at the time the invention was made to modify Choi's invention by having the first passive roller gear made of a polyester material or an elastomer series material.

The ordinary artisan would have been motivated to modify Choi's invention in a manner described above for at least the purpose of using a gear with low bending characteristics, resulting in less vibration to the rollers.

Regarding claims 3,4, and 13, Choi teaches, "wherein the first passive roller is a charging roller (Col. 3, Ln. 16) to charge a surface of the photoconductive drum to a predetermined voltage.

Regarding claims 5,6,15, and 16 Choi does not teach, "wherein the first passive roller gear has a Shore D hardness ranging from 50D to 70D. However, having the first passive roller gear has a Shore D hardness ranging from 50D to 70D is routine in the art as shown by Moriya et al. (see Col. 2, Ln. 5-12). It would have been obvious to one skilled in the art at the time the invention was made to modify Choi's invention by having the first passive roller gear having a Shore D hardness ranging from 50D to 70D.

The ordinary artisan would have been motivated to modify Choi's invention in a manner described above for at least the purpose of reducing the noise and vibration levels to a specific level to promote a more efficient charging method.

Regarding claim 11, Choi discloses, "An electrophotographic image forming apparatus (see title) forming an image on a recording medium including a photoconductive drum forming a nip (Fig. 3a, between ref. # 1 and 2) with a first passive roller, comprising: a drum gear (8) installed on the photoconductive drum (Col. 3, Ln. 13-14) to be rotated therewith; and a first passive roller gear (9) installed on the first passive roller (2) to be rotated therewith and in contact with the drum gear. Choi does not teach, "the first passive roller gear being formed of a material that is softer than the material of the drum gear such that impulses from pitches between the drum gear and the first passive roller gear are absorbed to prevent velocity variations between the photoconductive drum and the first passive roller at the nip therebetween." However,

the first passive roller gear being formed of a material that is softer than the material of the drum gear such that impulses from pitches between the drum gear and the first passive roller gear are absorbed to prevent velocity variations between the photoconductive drum and the first passive roller at the nip therebetween is routine in the art as shown by Moriya et al. (see Abstract, Ln. 5-13). It would have been obvious to one skilled in the art at the time the invention was made to modify Choi's invention by having the first passive roller gear being formed of a material that is softer than the material of the drum gear such that impulses from pitches between the drum gear and the first passive roller gear are absorbed to prevent velocity variations between the photoconductive drum and the first passive roller at the nip therebetween.

The ordinary artisan would have been motivated to modify Choi's invention in a manner described above for at least the purpose of reducing noise caused by the gears to promote a more efficient charging apparatus.

Regarding claim 21, Choi teaches, "wherein the drum gear is coaxially installed on the photoconductive drum so that the drum gear and the photoconductive drum rotate on the same axis (see Fig. 3a, dotted line on ref. # 1 and 8)."

Regarding claim 22, Choi teaches, "wherein the first passive roller gear is coaxially installed on the first passive roller so that the first passive roller gear and the first passive roller rotate on the same axis (see Fig. 3a, dotted line on ref. # 2 and 9)."

Claims 7-10, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi and Moriya et al. as applied to claims 1 and 11 above respectfully, and further in view of Hattori (US Pat. # 6,381,432).

Regarding claims 7 and 8, Choi and Moriya et al. do not teach, "further comprising a second passive roller gear coaxially installed on a second passive roller and in contact with and rotated by the first passive roller to cooperate with the first passive roller gear." However, as shown by the teaching of Hattori, further comprising a second passive roller gear (Col. 4, 41-43) coaxially installed on a second passive roller (15) and in contact with and rotated by the first passive roller (6) to cooperate with the first passive roller gear (Col. 4, 41-43) is routine in the art. It would have been obvious to one skilled in the art at the time the invention was made to modify the combination of Choi and Moriya et al. to include a second passive roller gear coaxially installed on a second passive roller and in contact with and rotated by the first passive roller to cooperate with the first passive roller gear.

The ordinary artisan would have been motivated to modify the combination of Choi and Moriya et al. in a manner described above for at least the purpose of providing a more efficient rotating means for a multi-purpose roller.

Regarding claim 9, Choi and Moriya et al. do not teach, "wherein the second passive roller is a cleaning roller to clean a surface of the first passive roller." However, wherein the second passive roller is a cleaning roller to clean a surface of the first passive roller is routine in the art as shown by Hattori (see Col. 5, Ln. 61-67). It would have been obvious to one skilled in the art at the time the invention was made to modify the combination of Choi and Moriya et al., to make the second passive roller a cleaning roller to clean the surface of the first passive roller.

The ordinary artisan would have been motivated to modify the combination of Choi and Moriya et al. in a manner described above for at least the purpose of cleaning the charging roller, to promote uniform charging.

Regarding claim 10, Moriya et al. teaches "wherein the second passive roller gear is made of a polyester material or an elastomer series material (see Abstract, Ln. 5)."

Regarding claim 17, Choi and Moriya et al. do not teach, "further comprising: a second passive roller forming a second nip with the first passive roller and to be rotated therewith; and a second passive roller gear coaxially installed on the second passive roller and in contact with and rotated by the first passive roller gear." However, as shown by the teaching of Hattori, a second passive roller (15) forming a second nip (Fig. 2, reference char. N) with the first passive roller (6) and to be rotated therewith; and a second passive roller gear (Col. 4, Ln. 41-43) coaxially installed on the second passive roller and in contact with and rotated by the first passive roller gear (Col. 4, Ln. 41-43) is routine in the art. . It would have been obvious to one skilled in the art at the time the invention was made to modify the combination of Choi and Moriya et al. to include a second passive roller forming a second nip with the first passive roller and to be rotated therewith; and a second passive roller gear coaxially installed on the second passive roller and in contact with and rotated by the first passive roller gear.

The ordinary artisan would have been motivated to modify the combination of Choi and Moriya et al. in a manner described above for at least the purpose of providing a more efficient rotating means for a multi-purpose roller.



Regarding claim 19, "Choi and Moriya et al. do not teach, "wherein the second passive roller is a cleaning roller to clean a surface of the first passive roller. However, wherein the second passive roller is a cleaning roller to clean a surface of the first passive roller is routine in the art as shown by Hattori (see Col. 5, Ln. 61-67). It would have been obvious to one skilled in the art at the time the invention was made to make the second passive roller a cleaning roller to clean the surface of the first passive roller.

The ordinary artisan would have been motivated to modify the combination of Choi and Moriya et al. in a manner described above for at least the purpose of cleaning the charging roller, to promote uniform charging.

Regarding claims 18 and 20, "Moriya et al. teaches, "wherein the second passive roller gear is made of a polyester material or an elastomer series material (see Abstract, Ln. 5)."

Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori (US Pat. # 6,381,432) in view of Moriya et al. (US Pat. # 6,571,060).

Regarding claim 23, Hattori discloses, "An image forming apparatus (Col. 1, Ln. 5-9) comprising: a photoconductive drum (21); a charging roller (22) to charge a surface of the photoconductive drum; a drum gear (Col. 4, Ln. 41-43) rotating the photoconductive drum; and a passive gear in contact with the drum gear to rotate the charging roller (Col. 4, Ln. 41-43). Hattori does not teach, "having a lower hardness than the drum gear." However, having a lower hardness than the drum gear is routine in the art as shown by Moriya et al. (see Abstract, Ln. 5-13). It would have been obvious to

one skilled in the art at the time the invention was made to modify Hattori's invention, to include a passive gear with a lower hardness than the drum gear.

The ordinary artisan would have been motivated to modify Hattori's invention in a manner described above for at least the purpose of reducing noise caused by the gears to promote a more efficient charging apparatus.

Regarding claim 24, Hattori discloses, "wherein the photoconductive drum and the charging roller form a nip therebetween (Fig. 2, reference char. 2), and the drum gear directly contacts the passive gear (Col. 4, Ln. 41-43)."

Regarding claim 25, Hattori discloses, "further comprising: a second passive gear in contact with the passive gear to rotate together with the passive gear (Col. 4, Ln. 41-43)." Hattori does not teach, "and having a lower hardness than the drum gear." However, having a lower hardness than the drum gear is routine in the art as shown by Moriya et al. (see Col. 4, Ln. 41-43). It would have been obvious to one skilled in the art at the time the invention was made to modify Hattori's invention, to include a passive gear with a lower hardness than the drum gear.

The ordinary artisan would have been motivated to modify Hattori's invention in a manner described above for at least the purpose of reducing the noise and vibration caused by the rotating gears.

Regarding claim 26, Hattori disclose, "wherein the passive gear comprises a first portion contacting the drum gear and a second portion contacting the second passive gear (see Col. 4, Ln. 41-43)."

Regarding claim 27, Hattori discloses, "The apparatus according to claim 24, wherein the passive gear is disposed between the drum gear and the second passive gear (see Fig.2 layout, and Col. 4, Ln. 41-43)."

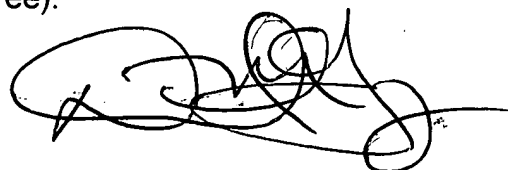
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan D. Walsh whose telephone number is 571-272-2726. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on 571-272-2119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan D. Walsh  
Patent Examiner  
Art Unit 2852

A handwritten signature in black ink, appearing to read 'David Gray', with a stylized, looping flourish extending from the end.

David Gray  
Primary Examiner